NISTTech

Electrophoresis Gels

Greater range of biomolecules extracted from gels

Description

The traditional gel electrophoresis process utilizes polysaccharide gel blends which are themo- and pH reversible. The gel can be liquefied by melting the polymer at either high temperatures or adjusting the pH to neutralize the charge of the gel. However, a significant portion of the themoreversible gels can only be converted to liquid at relatively high temperature (approximately 65 degrees Celsius). These high temperatures cause many proteins to denature and damage other biomolecules present in the sample. Similarly, pH reversible gels require a pH of approximately 3 or less, which can denature proteins and cause damage to biomolecules.

This alternative method protects the proteins and biomolecules while still allowing the gel to be liquefied. Utilizing gellan gum-based gels with divalent metal cations and diamine cross-linking agents, the gels are reversible under conditions that do not damage the biomolecules present in the gel. The biomolecules can be safely extracted from the sample once the electrophoresis is finished.

Applications

- **Molecular biology and microbiology**
  Protein analysis - extract delicate proteins at lower temperatures or more neutral pH levels
- **Forensics**
  Extracts a greater range of biomolecules

Advantages

- **Allows complete recovery of biomolecules**
  Reversible at relatively mild conditions which avoids damage to biomolecules

Abstract

The present invention provides electrophoresis apparatus and electrophoresis methods employing gellan gum based gels employing divalent metal cation and diamine cross-linking agents. The gels are reversible under conditions that do not damage the biomolecules separated using the gels. The present invention also provides novel gellan gum-based gels which are cross-linked which employ a diamine cross-linking agent.

Inventors

- Cole, Kenneth D.

Citations

1. K.D. Cole, Reversible gels for electrophoresis and isolation of DNA. Biotechniques. 1999 Apr;26(4):748-52, 754, 756.

References

- Expired U.S. Patent # 6,203,680
- Docket: 98-001US

Status of Availability

This technology is available in the public domain.

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